Session DP1 - Poster Session III.
POSTER session, Monday afternoon, October 23
Exhibit Hall AB, Quebec City Convention Centre

[DP1.057]

Ion Beam Injector for the High Current Transport Experiment (HCX)

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The Heavy Ion Fusion Accelerator Research Group at LBNL is completing the re-design of the LBNL 2-MV ESQ Injector that will deliver at least 500 mA of singly-charged potassium ion beam at 2 MV for the High Current Transport Experiment (HCX). The LBNL 2-MV ESQ Injector, built and operated since 1993, has produced a potassium beam with adequate current (0.8 A) and emittance (0.8 pi-mm-mr normalized) but with a hollow profile at the exit of the injector. This driver-scale injector consists of a 750 keV diode pre-injector followed by an electrostatic quadrupole accelerator (ESQ) which provides strong (alternating gradient) focusing for the space-charge dominated beam and simultaneously accelerates the ions to 2 MeV. A matching section is required to give the beam emerging from the injector the proper shape to match the downstream HCX lattice. We will present the required modifications to the diode geometry and ESQ focussing strengths that will reduce the beam nonuniformity at the end of the injector. We will also present numerical simulations that show the evolution of the beam in the injector, through the matching section, as well as it is transported in the HCX.

Part D of program listing